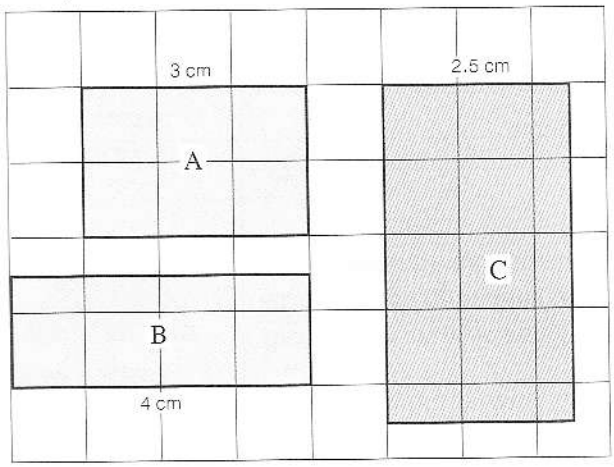
A Counting Squares

A metric unit for measuring small areas is a square with sides of one centimetre. We call this unit a square centimetre. Notation : cm^2.

1a) Find all the areas by counting square centimetres. Complete the table below.



rectangle	cm^2 counted	length in cm	width in cm
A		3	
B		4	
C			2.5

Formula : Area of a rectangle = length x width.

b) Check the above formula for the rectangles A, B and C.

Area rectangle A = ..3.. x ..... = ... cm^2.

Area rectangle B = ..4.. x ..... = ... cm^2.

Area rectangle C = ... x ..2.5.. = ... cm^2.

2 Take measurements and calculate the area of these rectangles.

a)

length = ... cm

width = ... cm

area = ... cm^2

b) length = ... cm

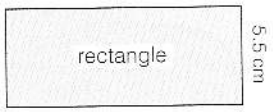
width = ... cm

area = ... cm^2

B Use a Calculator

1 The diagrams are not drawn to scale. Use the given measurements to calculate the areas. Make sure you write the correct unit for each area.

a)



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b)

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2 A badminton court for doubles measures 13.4 m by 6.1 m. Calculate the area of the court.

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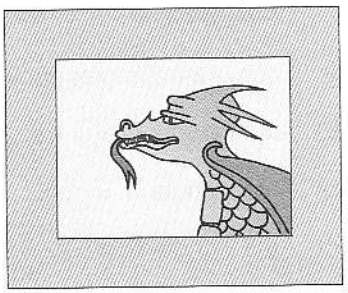
3 A picture measuring 36 cm by 24 cm is being mounted on grey cardboard which measures 48 cm by 36 cm.



a) Find the area of the picture.

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b) Find the area of the cardboard.

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c) Calculate the area of grey cardboard still visible after mounting the picture.

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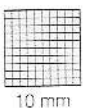
4a)



Complete :

1 cm^2 = ... mm^2

b) Complete : 82.3 cm^2 = ... mm^2

c) The area of a fingerprint is measured to be 172 mm^2. Convert this measurement to square centimetres.

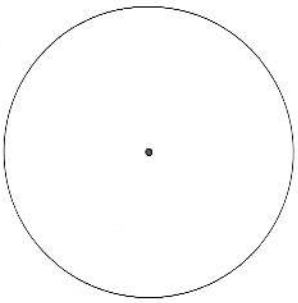
172 mm^2 = ... cm^2.

56 Circumference

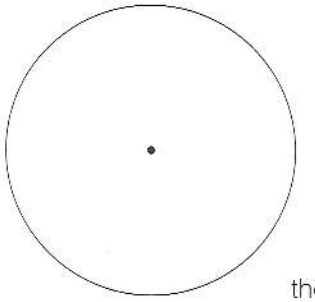
A Going Round in Circles

1a) Label with M the centre of this circle.

b) Draw and label with r the radius of the circle.



c)



Draw and label with d the diameter of this circle.

d) Describe what is meant by the *circumference* of a circle.

.....

.....

2a) Draw with compasses a circle with centre M and radius 2 cm.

b) Measure the diameter of this circle.

M •

d = ...

c) Use a piece of cotton to measure the circumference.

C ≈ .....

3 We found that the circumference of a circle is about 3 times as long as the diameter. David said, *"The circumference of a circle is about 6 times as long as the radius"*. Do you agree? Explain your answer.

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4 The *radius* of a bicycle wheel is 28 cm. Estimate the *circumference* of the wheel.

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5 The diameter of a tree stump is 1.8 m. Estimate the *circumference* of the tree.

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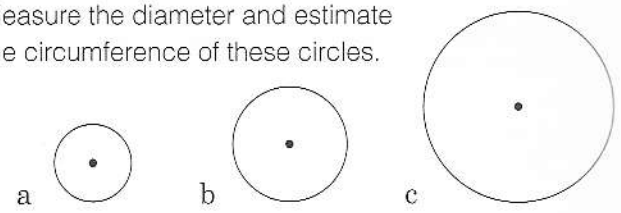
B Pi

1 Measure the diameter and estimate the circumference of these circles.



Circle a : C ≈ .....

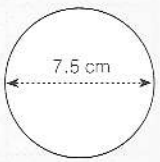
Circle b : C ≈ .....

Circle c : C ≈ .....

The exact length of the circumference of a circle is found with the formula $C = \pi \times d$.

In this formula C stands for circumference, d for diameter and π (say *pi*) is the number 3.141592654, which can be rounded to 3.14.

Example : A circle has a diameter of 7.5 cm. Calculate the length of the circumference.



Working : $C = \pi \times d$
$= 3.14 \times 7.5$
$= 23.55$ cm

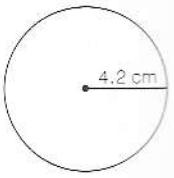
2 Calculate the circumference of each circle in question 1.

Circle a : C = 3.14 x 1 = ... cm

Circle b : C = ... cm

Circle c : C = ... cm

3 A circle has a radius of 4.2 cm.



a) Calculate the diameter.

d = ... cm

b) Calculate the circumference.

C = ... cm

4 How much sticky tape is needed to stick the lid to this container?

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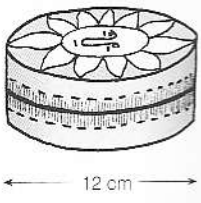

58 Area 2

Measurement

A Other Shapes

1 In order to estimate the area of the green shape we placed a grid of square centimetres on top of it. Estimate the area.

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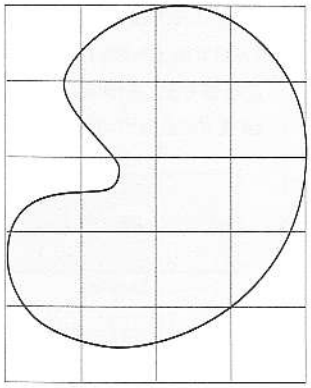
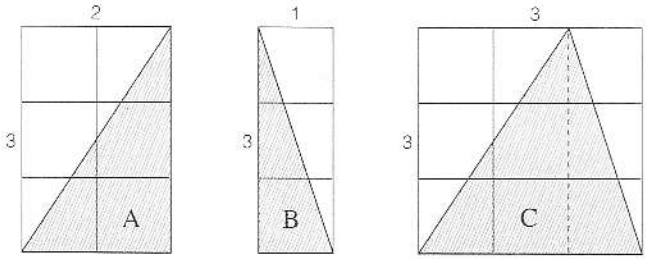




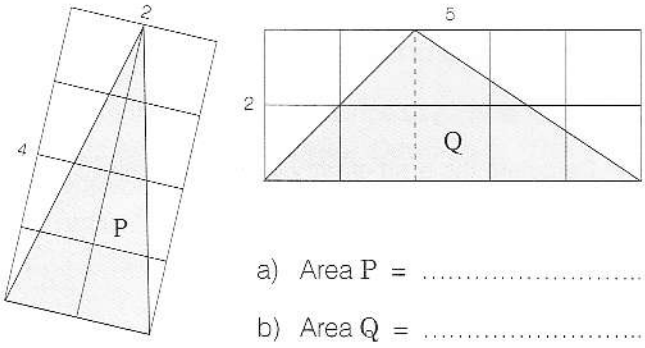
2 Each of the triangles above is half a rectangle. Complete.

a) Area triangle A = ...

b) Area triangle B = ...

c) Area triangle C = ...

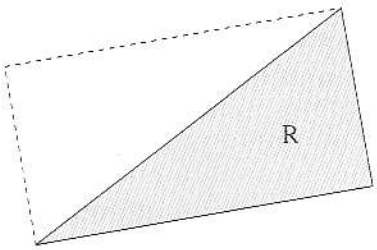
3 Calculate the areas of triangle P and Q.



a) Area P = ...

b) Area Q = ...

4



Take measurements and calculate the area of triangle R.

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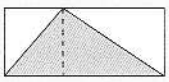
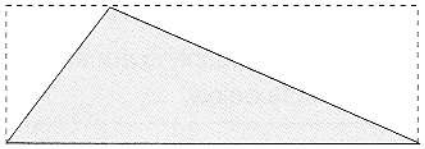
B Area and Perimeter

The area of a triangle is half of the area of a rectangle fitted around it.



1



Take measurements to work out the area of the green triangle. .....

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2 Hinemoa drew a square with a perimeter of 20 cm. Calculate the area of Hinemoa's square.

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3a) Draw a rectangle with an area of 24 cm² and a perimeter of 22 cm.

b) Use the above rectangle to draw a triangle with an area of 12 cm². Colour the triangle red.

c) Measure the perimeter of the red triangle.

Perimeter = ...

d) Do you think all students in your class will have the same answer in (c)? Explain why you think that.

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